KENTUCKY

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)
For FY 2007-2010

AMENDMENT #2006.023

I. Proposed Action:

The Kentucky Transportation Cabinet (KYTC) hereby submits a copy of a resolution from the Kentuckiana Regional Planning and Development Agency's (KIPDA) Transportation Policy Committee showing their approval of Amendment No. 7 to the FY 2006-2008 Transportation Improvement Plan (TIP) and Amendment No. 7 to the Horizon 2030 Long Range Transportation Plan (LRTP). The KYTC requests inclusion of these amendments in the KYTC FY 2007-2010 Statewide Transportation Improvement Program (STIP). (See attachments for details of the projects that are being amended.)

Location: KIPDA MPO Area

Scope of Activity:

Amendment to the FY 2007-2010 STIP to include Amendment No. 7 to KIPDA's FY 2006-2008 TIP and Amendment No. 7 to the 2030 LRTP.

II. Additional Remarks:

Included with the signed resolution is the listing of amendments to the 2006-2008 projects in Jefferson, Bullitt, and Oldham Counties and the Air Quality Analysis Documentation for Amendment of the Horizon 2030 Transportation Plan.

III. Amendment Approval:

Amendment Recommended for Approval:

Ronald B. Rigney 1/30/07
Kentucky Transportation Cabinet Date

Approval of STIP Amendment:

Gregory D Rawlins 2-2-07
Federal Highway Administration Date

KENTUCKY

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III. Amendment Approval:

Amendment Recommended for Approval:

Kentucky Transportation Cabinet 3/27/07 Date

Approval of STIP Amendment:

Federal Transit Administration 4/17/07 Date

U.S. Department of Transportation

Federal Highway Administration
Kentucky Division
330 W. Broadway
Frankfort, KY 40601

Federal Transit Administration
Region IV
61 Forsyth St., SW, Suite 17T50
Atlanta, GA 30303

January 5, 2007

Mr. Jack L. Scriber, Executive Director
Kentuckiana Regional Planning and Development Agency
11520 Commonwealth Drive
Louisville, KY 40299

Dear Mr. Scriber:

The Kentucky Division Office of the Federal Highway Administration (FHWA), and Region 4 of the Federal Transit Administration (FTA), in consultation with the Indiana Division Office of the Federal Highway Administration and Regions 4 and 5 of the United States Environmental Protection Agency (EPA), have reviewed the following documents:

Amendment 7 to the 06-08 Transportation Improvement Program (TIP) and Amendment 7 to the 2030 Long Range Transportation Plan (LRTP) for the Louisville Area Metropolitan Planning Organization (MPO) (MPO resolution approval date of November 28, 2006)

The Kentucky Environmental and Public Protection Cabinet's Division for Air Quality, the Kentucky Transportation Cabinet's Division of Planning, the Kentucky Transportation Cabinet's Office of Transportation Delivery, the Louisville Metro Air Pollution Control District, and the Transit Authority of River City also had an opportunity to review and comment on the above-mentioned documents.

We found that these documents met the five primary criteria of the Transportation Conformity Rule (62 FR 43779, August 15, 1997):

- use of the latest planning assumptions,
- use of the latest emissions model,
- use of appropriate consultation procedures,
- consistency with the mobile source emission budgets in the State Implementation Plan (SIP), and
- provisions for timely implementation of transportation control measures in the SIP.

We also found that these documents met the criteria outlined in the Transportation Conformity Rule Revision for the 8-hour Ozone and $PM_{2.5}$ Standards (69 FR 40004, July 1, 2004) and the Transportation Conformity Rule Revision for $PM_{2.5}$ (70 FR 24280, May 6, 2005).

We therefore find that the following documents conform to the 8-hour Ozone and $PM_{2.5}$ standards.

Amendment 7 to the 06-08 Transportation Improvement Program (TIP) and Amendment 7 to the 2030 Long Range Transportation Plan (LRTP) for the Louisville Area Metropolitan Planning Organization (MPO) (MPO resolution approval date of November 28, 2006)

Jose Sepulveda
Division Administrator
Federal Highway Administration

FOR

Yvette Taylor
Regional Administrator
Federal Transit Administration

c: Robert Talley, FHWA-IN
Kay Prince, EPA-R4
John Lyons, DAQ
Art Williams, Louisville APCD
Barry Barker, TARC
William Nighbert, KYTC–Administration
Ray Polly, KYTC-Administration
Ron Rigney, KYTC-Program Management
Daryl Greer, KYTC-Planning

KIPDA
Kentuckiana Regional Planning and Development Agency

A Resolution of the Kentuckiana Regional Planning and Development Agency Transportation Policy Committee adopting Amendment #7 *of the FY 2006 – FY 2008 Transportation Improvement Program for the Louisville and Southern Indiana Urbanized Area.*

Kentucky Member Counties

Bullitt
Henry
Jefferson
Oldham
Shelby
Spencer
Trimble

Indiana Member Counties

Clark
Floyd

Whereas, the Kentuckiana Regional Planning & Development Agency (KIPDA) Transportation Policy Committee is designated by the governors of the state of Indiana and the Commonwealth of Kentucky under state and federal laws, as the Metropolitan Planning Organization (MPO) for the Louisville (KY-IN) Metropolitan Planning Area (MPA) encompassing Clark and Floyd counties and a portion of Harrison County in Indiana, and Bullitt, Jefferson, and Oldham counties in Kentucky; and

Whereas, consistent with federal and state mandates, states' environmental requirements, and with the KIPDA Transportation Policy Committee's Memorandum of Agreement, *Public Involvement Process, Title VI/ Environmental Justice Plan*, and other operating procedures, the KIPDA Transportation Policy Committee has worked with local, state, and federal jurisdictions and agencies in a continuing, cooperative, and comprehensive planning process; and has incorporated the work of local governments, and the suggestions of citizens, businesses, and interests throughout the MPA in this document; and

Whereas, the *FY 2006 – FY 2008 Transportation Improvement Program for the Louisville and Southern Indiana Urbanized Area* is a subset of *Horizon 2030*, as amended, the Louisville (KY-IN) MPO Long-Range Transportation Plan, which has been determined to conform to the State Implementation Plans of Indiana and Kentucky; and

Now, therefore be it resolved, by the Transportation Policy Committee of KIPDA that Amendment #7 of the *FY 2006 – FY 2008 Transportation Improvement Program for the Louisville and Southern Indiana Urbanized Area*, is approved by official action at the November 28, 2006 meeting. This action is contingent upon and effective when a conformity finding is made by the appropriate federal agencies.

Be it further resolved, that the KIPDA Staff is authorized to transmit Amendment #7 of the *FY 2006 – FY 2008 Transportation Improvement Program for the Louisville and Southern Indiana Urbanized Area* to the Federal Transit Administration, Federal Highway Administration, and the Environmental Protection Agency to make the federal conformity determination in accordance with the Clean Air Act and the Environmental Protection Agency's transportation conformity regulations, and for review based on the planning process requirements, and other federal regulations;

Be it further resolved, that the KIPDA staff is authorized to transmit Amendment #7 of the *FY 2006 – FY 2008 Transportation Improvement Program for the Louisville and Southern Indiana Urbanized Area* to the Governors of the state of Indiana and Commonwealth of Kentucky and to the Indiana Department of Transportation and the Kentucky Transportation Cabinet in compliance with federal and state requirements;

Adopted by the KIPDA Transportation Policy Committee this 28th day of November 2006.

Equal Opportunity Employer

Honorable John E. Reisert
Transportation Policy Committee Chair

Harold Tull, Recording Secretary
KIPDA Transportation Division Director

11520 Commonwealth Drive
Louisville, KY 40299
502-266-6084
Fax 502-266-5047
KY TDD 1-800-648-6056
www.kipda.org

Now, therefore let it be resolved, that the KIPDA Transportation Policy Committee adopts Amendment #7 of *Horizon 2030*. This action is contingent upon and effective when a conformity finding is made by the appropriate federal agencies;

Be it further resolved, that the KIPDA Staff is authorized to transmit Amendment #7 of *Horizon 2030* to the Federal Transit Administration, Federal Highway Administration, and the Environmental Protection Agency to make the federal conformity determination in accordance with the Environmental Protection Agency's transportation conformity regulations, and the Federal Transportation Act and other federal regulations;

Be it further resolved, that the KIPDA staff is authorized to transmit Amendment #7 of *Horizon 2030* to the Governors of the state of Indiana and Commonwealth of Kentucky and to the Indiana Department of Transportation and the Kentucky Transportation Cabinet in compliance with federal and state requirements.

Adopted by the KIPDA Transportation Policy Committee this 28th day of November 2006.

Honorable John Reisert
Transportation Policy Committee Chair

Harold Tull, Recording Secretary
KIPDA Transportation Division Director

Amendment #7 of the
Horizon 2030 Transportation Plan and
FY 2006 – FY 2008 Transportation Improvement Program

Public Review

Project information was made available for public review from October 26 through November 9, 2006 at public libraries and on the KIPDA website. A public open house was held on November 27, 2006 at TARC.

The public review period for the amendments was advertised in the Courier-Journal, Hoy en las Americas, the Evening News, the Tribune, the Oldham Era, Pioneer News, and the Louisville Defender. Copies of the advertisements are attached. In addition, TARC mailed 700 notices to member of the public and media.

Many comments were received and a summary is attached. The comments can be viewed on the KIPDA website: http://www.kipda.org/Transportation/Public_Outreach.aspx

KIPDA
Kentuckiana Regional Planning and Development Agency

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SUMMARY OF PUBLIC COMMENTS FOR PROPOSED AMENDMENTS TO THE TRANSPORTATION IMPROVEMENT PROGRAM AND HORIZON 2030 TRANSPORTATION PLAN

KIPDA received 505 written and 36 verbal comments during the public comment period from October 26 through November 9.

Of the 541 total comments, the vast majority (536) were in opposition to removing the eight advanced transit projects from Horizon 2030. The reasons cited included the following:

- Exploration of light rail and other mass transit instead of building bridges and widening highways
- Improve air quality and health of our residents
- Provide alternative means of transportation for low-income, disabled and elderly populations
- Attract more economic growth to the area
- Reduce our dependence on foreign oil

From November 10 through November 20, KIPDA received an additional 73 comments.

11520 Commonwealth Drive
Louisville, KY 40299
502-266-6084
Fax: 502-266-5047
KY TDD 1-800-648-6056
www.kipda.org

Legal Notices

HORIZON 2030 Transportation Plan and 2006-2008 Transportation Improvement Program Amendments

The Kentuckiana Regional Planning and Development Agency is seeking public comment on changes to projects in Horizon 2030 and the 2006 -2008 TIP. Project information will be available for public review from 10/26 - 11/9 at public libraries in Bullitt, Clark, Floyd, Jefferson, and Oldham counties. Information may also be obtained and comments made by attending the Open House listed below, or by contacting Nedra Morrell at 502-266-6084, 1-800-648-6056 (KY TDD) or 1-800-962-8408 (IN TDD). The Amendments are also available for review at www.kipda.org/transport/drafts.asp. Please send comments to KIPDA, attention TIP Amendment at 11520 Commonwealth Drive, Louisville, KY 40299 or by email to Kipda.trans@ky.gov

In accordance with the "Americans with Disabilities Act," people needing assistance should contact KIPDA with the requirements at the telephone numbers or address listed above.

Open House
November 8, 2006
4:30 p.m. to 7:30 p.m.
TARC Board Room
1000 West Broadway
Louisville, KY

Courier-Journal,
Evening News,
The Tribune,
Oldham Era,
Pioneer News,
and the Louisville Defender

Hoy en las Americas

AVISO LEGAL

CAMBIOS AL PLAN DE TRANSPORTACION HORIZON 2030 y al Programa de Mejoras a la Transportación del 2006-2008 - La Agencia para la Planificación y Desarrollo Regional de Kentuckiana busca comentarios del público acerca de los cambios a los proyectos Horizon 2030 y el TIP del 2006-2008. El público puede revisar información en materia del proyecto desde el 26 de octubre hasta el 9 de noviembre en las bibliotecas públicas de los condados de Bullitt, Clark, Floyd, Jefferson y Oldham. También pueden asistir a una casa abierta el 8 de noviembre de 2006 en la sala de conferencias de TARC, 1000 West Broadway, Louisville, KY, de 4:30 p.m. a 7:30 p.m.; hablar con Nedra Morrell al 502-266-6084, 1-800-648-6056 (KY TDD) ó 1-800-962-8408 (IN TDD); o, visitar el sitio www.kipda.org/transport/drafts.asp. Por favor envíe sus comentarios escritos a KIPDA, Attn: TIP Amendment, 11520 Commonwealth Dr., Louisville, KY 40299 o a Kipda.trans@ky.gov. Según el código federal "Americans with Disabilities Act", aquellas personas con discapacidades que necesiten asistencia deben comunicarse con KIPDA a los mencionados teléfonos y direcciones para informarles los requisitos.

Amendment #7
Horizon 2030 Transportation Plan and FY 2006 - FY 2008 Transportation Improvement Program

November 2006

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
Indiana Projects								
979		Clarksville -New Albany Advanced Transit	Construct & operate higher capacity & speed transit in approx. 6 mile corridor from south central corridor west to Main St in New Albany. Feeder transit service to include neighborhood circulators & demand response service for persons w/ disabilities	TARC	2018	Remove project from the AQ analysis	Move project from Plan to Illustrative List	
		Southern Indiana Demo Express Bus Service and Park & Ride Lot	Express bus service between downtown Louisville and growing areas of Clark and Floyd counties and construction of park & ride lot in the vicinity of I-65 and I-265	TARC	2008-2009	TARC will perform Off-model analysis.	Add to Plan	Add to TIP - FY 2007 Construction & Operating $294,680, FY 2008 Operating $238,680 CMAQ funds
	0600661	Various Traffic Signalizations	Modernize traffic signals at various locations including: I-65 at Veterans Pkwy, Lewis & Clark Pkwy at Frontage Rd., Eastern Blvd at Frontage Rd., Stansifer Ave. at Frontage Rd., Elm St. at Scribner St., IN 111 at Charlestown Rd., and I-64 WB ramp at IN 64/62	INDOT	2008	Exempt per Sec. 93.127	Add to Plan	Add to TIP - FY 2008 Construction $315,000 STP-State funds
514	0500176	Veterans Parkway Phase II	Phase 2: Widen Charlestown-New Albany Pike from 2 to 4 lanes from Veterans Pkwy. To Holman Ln. Widen Holman Ln. from 2 to 3 lanes (3rd lane will be a center turn lane) from IN 62 to Charlestown-New Albany Pike.	Jeffersonville Public Works	2010	2012 Scenario	Change Description to "Widen Charlestown-New Albany Pike from 2 to 4 lanes from Veterans Pkwy. To Holman Ln. Widen Holman Ln. from 2 to 4 lanes from IN 62 to Charlestown-New Albany Pike."	Change Description to "Widen Charlestown-New Albany Pike from 2 to 4 lanes from Veterans Pkwy. To Holman Ln. Widen Holman Ln. from 2 to 4 lanes from IN 62 to Charlestown-New Albany Pike."

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
Kentucky Projects								
967		Anchorage to LaGrange Corridor Advanced Transit	Anchorage to LaGrange Corridor Advanced Transit (Blue Line Extension): Construct and operate higher capacity and higher speed transit service in an approx. 19 mi. corridor from Anchorage to LaGrange. Feeder service would include neighborhood circulators & demand response service for persons with disabilities.	TARC	2023	Remove project from the AQ analysis	Move project from Plan to Illustrative List	
980		Bardstown Rd. Corridor Advanced Transit	Bardstown Rd. Corridor (Brown Line): Construct & operate higher capacity & higher speed transit service in approx. 12 mi. corridor from Baxter Ave. and Lexington Rd. to Fern Creek. Feeder service would include neighborhood circulators & demand response service for persons w/ disabilities.	TARC	2020	Remove project from the AQ analysis	Move project from Plan to Illustrative List	
978		Dixie Hwy. Corridor Advanced Transit	Dixie Hwy. Corridor Advanced Transit (Orange Line): Approximately 22 miles of advanced transit extending from downtown Louisville to south of the Gene Snyder Fwy. The project will also include enhanced feeder service (neighborhood circulators and demand-response service for persons with disabilities).	TARC	2015	Remove project from the AQ analysis	Move project from Plan to Illustrative List	
968		Downtown Advanced Transit	Downtown Advanced Transit (Gray Line): Construct & operate higher capacity & speed transit service in approx. 5 mi. corridor along E. Market St. & W. Market St. from downtown Louisville to Broadway at 29th St. Feeder service would include neighborhood circulators & demand response for persons	TARC	2015	Remove project from the AQ analysis	Move project from Plan to Illustrative List	
		Eastern Parkway	Roadway improvements to Eastern Parkway from I-65 to Third St., including reducing the number of travel lanes from 4 to 2.	Univ. of Louisville	2009	2009 Scenario	Add to Plan	

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
966		Frankfort Ave. Corridor Advanced Transit	Will construct & operate higher capacity & speed transit in approx. 18 mi. corridor following CSX ROW from Baxter Ave. & Lexington Rd. east to Eastwood. Feeder transit service would include neighborhood circulators & demand response service for persons with disabilities.	TARC	2015	Remove project from AQ analysis	Move project from Plan to Illustrative List	
	286.00	I- 64	Improve I-64/KY 913 (Blankenbaker Pkwy) interchange as recommended by KIPDA's interchange study. The project recommendation affecting the air quality analysis is the addition of 1 northbound lane on Blankenbaker Parkway from Bluegrass Parkway to the I-64 eastbound on-ramp.	KYTC	2010	2012 Scenario	Add to Plan	Add to TIP , FY 2008 Const $1,800,000 IM funds
	389.00	I- 64	Reconstruct Shawnee Expressway NB ramp to WB I-64 increasing the number of lanes from 1 to 2.	KYTC	2008	2009 Scenario	Add to Plan	Add to TIP, FY 2006 Design $200,000, FY 2007 Const $3,500,000 IM funds
181	52.00	I- 64/ Hurstbourne Pkwy	Reconstruct existing interchange to include a 2 lane flyover ramp from Hurstbourne Pkwy. northbound to I-64 westbound, add loop ramp from I-64 westbound to Hurstbourne Pkwy. southbound, and reconstruct the remaining ramps.	KYTC	Changed from 2009 to 2010-2012	Change project scope, and place in. 2012 scenario	Remove flyover ramp from Linn Station Road to I-64 westbound from project description.	Change description to "Construct ramp 7 "flyover" from NB Hurstbourne Pkwy to Westbound I-64 and re-time signals along Hurstbourne Pkwy" and Change costs to FY 2006 ROW $500,000, FY 2007 Util $1,500,000, FY 2009 Const $8,000,000, FY 2010 Const $10,000,000, IM funds
130	48.01	I- 71	Improve I-71 corridor from I-64 to I-265	KYTC		Remove from air quality analysis.	Replace with following 3 projects.	Delete from TIP. Replace with the next 2 projects
	48.10	I- 71	Addition of NB and SB auxiliary lanes on I-71 from the Kennedy interchange, including operational improvements, to the Zorn Interchange	KYTC	2012	2012 Scenario	Add to Plan	Add to TIP , FY 2007 Design $900,000, FY 2008 ROW $1,000,000, FY 2008 Utilities $1,000,000, NH funds
	48.20	I- 71	Addition of NB and SB auxiliary lanes on I-71 and I-264 including a possible flyover ramp from I-71 SB to US 42 Interchange.	KYTC	2013-2020	2020 Scenario	Add to Plan	Add to TIP, FY 2007 Design $600,000 NH funds

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
	48.30	I- 71	Reconstruction of the I-71/I-265 (Snyder Freeway) interchange including a possible flyover ramp from I-265 NB to I-71 SB..	KYTC	2015-2020	2020 Scenario	Add to Plan	
131	28.00	I-264	Construct new I-264 (Henry Watterson Expwy.) interchange at KY 1447 (Westport Rd.) adding an additional lane in each direction in the interchange area.	KYTC	Changed from <=2009 to 2010-2012	2012 Scenario	AQ phase change	Add FY 2006 Util $4,000,000 NH Funds, Move Construction from FY 2006 and split into FY 2007 Const $17,500,000 and FY 2009 Const $7,500,000 and change from NH to STP - ST funds
	256.00	I-264	Add an auxiliary lane on I-264 eastbound from near the KY 1447 (Westport Rd.) interchange to the US 42 (Brownsboro Rd.) interchange	KYTC	2011	2012 Scenario	Add to Plan	
	263.00	I-265	Improve I-265/KY 61 (Preston Hwy.) interchange as recommended by KIPDA's interchange study. The project recommendation affecting the air quality analysis is the addition of 1 northbound and 1 southbound lane on Preston Highway from Cooper Chapel Road to the I-265 eastbound ramps.	KYTC	2010	2012 Scenario	Add to Plan	
	264.00	I-265	Improve I-265/US 31E (Bardstown Rd.) interchange as recommended by KIPDA's interchange study. The project recommendation affecting the air quality analysis is the addition of 1 southbound lane on Bardstown Road from the Kroger Driveway to the I-265 westbound on-ramp.	KYTC	Probably 2009	2009 Scenario	Add to Plan	Add to TIP, FY 2008 Const $1,000,000 IM funds
	266.00	I-265	Improve I-265/KY 155 (Taylorsville Rd.) interchange as recommended by KIPDA's interchange study. The project recommendation affecting the air quality analysis is the addition of 1 eastbound lane on Taylorsville Road from St. Michael's Drive to the I-265 southbound on-ramp/Taylorsville Road intersection (length approximately 0.3 miles)..	KYTC	2009	2009 Scenario	Add to Plan	Add to TIP, FY 2008 Const $1,000,000 IM funds

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
	271.00	I-265	Improve I-265/KY 146(LaGrange Rd.) interchange as recommended by KIPDA's interchange study. The project recommendations affecting the air quality analysis are: (1) the addition of 1 receiving lane on the I-265 south on-ramp and (2) the extension of 1 northbound lane on KY 146 from Kroger to Reamers Road.	KYTC	2009	2009 Scenario	Add to Plan	Add to TIP, FY 2008 Const $1,500,000 IM funds
	320.40	KY 22	Reconstruct KY 22 widening it from 2 to 3 lanes (3rd lane will be a center turn lane) from Hitt Rd. to Murphy Ln	KYTC	2008	2009 Scenario	Add to Plan	Add to TIP, FY 2007 Const $850,000 State funds
140	304.01	KY 22/KY 146	Widen KY 146 (Lagrange Rd.) from 2 to 5 lanes (5th lane will be a center turn lane) from Pryor Ave. to KY 329. Widen KY 22 from 2 to 5 lanes from KY 329 to KY 393.	KYTC		Remove from air quality analysis.	Replace with following 3 projects.	Delete from the TIP - Split into the following 2 projects
		KY 146	Widen KY 146 (Lagrange Rd.) from 2 to 3 lanes (3rd lane will be a center turn lane) from Pryor Ave. to KY 329.	KYTC	2010-2012	2012 Scenario	Add to Plan	
	304.10	KY 22	Reconstruct KY 22 widening it from 2 to 3 lanes (3rd lane will be a center-turn lane) from KY 329 to KY 329B and from 2 to 5 lanes (5th lane will be a center-turn lane) from KY 329B to Abbott Lane	KYTC	2010-2012	2012 Scenario	Add to Plan	Add to TIP, FY 2007 Design $600,000, FY 2008 ROW $2,000,000, FY 2008 Util $2,000,000, FY 2009 Const $9,000,000, State Funds
	304.20	KY 22	Reconstruct KY 22 widening it from 2 to 5 lanes (5th lane will be a center-turn lane) from Abbott Ln to the proposed KY 393 intersection and from 2 to 3 lanes (3rd lane will be a center-turn lane) from the proposed KY 393 intersection to the existing KY 393 intersection.	KYTC	2010-2012	2012 Scenario	Add to Plan	Add to TIP, FY 2008 Design $600,000, FY 2009 ROW $3,000,000, FY 2009 Util $2,000,000, FY 2010 Const $8,000,000, State Funds
493		KY 44	Reconstruct and add center turn lane from Mt. Washington Bypass to 2.0 miles east of Mt. Washington Bypass	KYTC	Changed from <=2009 to 2010-2012	2012 Scenario	AQ phase change	Move Design from FY 2005 to FY 2006 and move FY 2006 ROW and Util to future, and change from STP-St funds to State funds
	150.01	KY 44	Reconstruct KY 44 widening it from 2 to 5 lanes (5th lane will be a center-turn lane) from I-65 to Mt. Washington.	KYTC	2013-2015	2020 Scenario	Add to Plan	FY 2008 Design $2,000,000 State Funds
	185.00	KY 53	Add new auxiliary right lane on KY 53 from I-71 ramp to New Moody Ln.	KYTC	2008	2009 Scenario	Add to Plan	Add to TIP, FY 2008 Const $160,000, State Funds

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
	391.00	KY 480	Widen KY 480 from 3 to 5 lanes (3rd lane is presently a center turn lane--project adds a travel lane in each direction) from I-65 to the Industrial Park (Omega Parkway in Cedar Grove Business Center), from 3 to 4 lanes from the Industrial Park (Omega Parkway in Cedar Grove Business Center) to Cedar Grove Elementary School, and from 2 to 3 lanes (3rd lane will be a center turn lane) from Cedar Grove Elementary School to Valley View Drive.	KYTC	2008	2009 Scenario	Add to Plan	Add to TIP, FY 2007 Design $400,000, FY 2007 Const $4,400,000, State funds
	293.00	KY 1494	Widen travel lanes on KY 1494 in Bullitt Co., and relocate road from 2000 ft. west of KY 61 to KY 61.	KYTC	2006	2009 Scenario	Add to Plan	FY 2006 Const $150,000, KYD funds
442	8201.00	LaGrange Overpass	Construct new I-71 overpass with approaches from Commerce Pkwy and Peak Road	KYTC	Changed from 2015 to 2010	2012 Scenario	AQ phase change	Move Design from 2006 to 2007 and increase to $2,000,000, FY 2008 ROW $1,000,000, FY 2008 Util $1,000,000, FY 2008 Const $11,000,000, State Funds
198		Old Henry Rd.	Construct new 4 lane route from Old Henry Rd. interchange at I-265 (Gene Snyder Fwy.) to KY 22 in the vicinity of KY 329B (Crestwood Bypass).	KYTC	Changed from <=2012 to 2013-2020	2020 Scenario	AQ phase change	Move ROW from FY 2008 to future.
	394.00	Shelby Campus Roads	Construct new roads connecting US 60, Hurstbourne Pkwy, and Whipps Mill Rd. crossing the U of L Shelby Campus	KYTC	2009	2009 Scenario	Add to Plan	Add to TIP, FY 2008 Const, $5,800,000 State Funds
235		South Central Corridor Advanced Transit	Construct and operate high capacity & speed transit service in an approximately 24-mile corridor from KY 841 & KY 1020 (National Turnpike) to Lewis & Clark Pkwy. Feeder transit service would include neighborhood circulators & demand response service for persons w/ disabilities.	TARC	2015	Remove project from AQ analysis	Move project from Plan to Illustrative List	

KIPDA ID	State ID	Project	Description	Project Sponsor	Year Project Open for Use	Air Quality Analysis Status	Change to Horizon 2030 Plan	Change to TIP
977		South East Corridor Advanced Transit	South East Corridor Advanced Transit (Green Line): Approximately 15 miles of advanced transit extending from the University of Louisville eastward to the Bluegrass & Blankenbaker Industrial Parks. The project would also include enhanced feeder service (neighborhood circulators and demand-response service for persons with disabilities).	TARC	2023	Remove project from the AQ analysis	Move project from Plan to Illustrative List	

AIR QUALITY ANALYSIS DOCUMENTATION FOR AMENDMENT OF THE HORIZON 2030 TRANSPORTATION PLAN

OCTOBER 25, 2006

AIR QUALITY CONFORMITY

There are presently two nonattainment areas in the Louisville area. The Louisville 8-hour ozone nonattainment area consists of Clark and Floyd counties, IN, and Bullitt, Jefferson, and Oldham counties, KY. In June 2004, it was designated as a basic nonattainment area under the 8-hour standard for the pollutant ozone. The Louisville small particulate matter (PM 2.5) nonattainment area consists of Clark and Floyd counties and the Madison Township of Jefferson County, IN, and Bullitt and Jefferson counties, KY. In April 2005, it was designated as a nonattainment area under the PM 2.5 standard.

KIPDA is amending *Horizon 2030*, the long range transportation plan, and the FY 2006 – FY 2008 Transportation Improvement Program. This conformity analysis will support conformity determinations by the metropolitan planning organization and the U. S. Department of Transportation agencies for both documents. This analysis is intended to support determinations of conformity under both the 8-hour ozone standard and the PM 2.5 standard.

CONFORMITY UNDER THE 8-HOUR OZONE STANDARD

Prior to being designated as nonattainment for the 8-hour ozone standard, a portion of the area was designated as a nonattainment and later maintenance area under the 1-hour ozone standard. During the time when that portion was a nonattainment or maintenance area, the state and local air quality agencies were required to develop State Implementation Plans (SIPs) limiting pollutant emissions. These limits, known as emission budgets, were established for the precursors of ozone, volatile organic compounds (VOCs) and oxides of Nitrogen (NOx). These SIPs were developed, and the 1-hour standard was eventually met.

To avoid confusion concerning the portions of the Louisville 8-hour ozone nonattainment area, the following definitions will apply.

- Nonattainment area -- the area which has a nonattainment status for the 8-hour ozone standard. This area consists of Clark and Floyd counties in Indiana and Bullitt, Jefferson, and Oldham counties in Kentucky.
- Maintenance area -- the area which was a maintenance area for the 1-hour ozone standard before the 8-hour ozone designations were made. This area consists of Clark and Floyd counties in Indiana and Jefferson and portions of Bullitt and Oldham counties in Kentucky.
- New (Nonattainment) Area(s) -- the portions of Bullitt and Oldham counties which are now in the nonattainment area but which were not in the maintenance area and therefore are not covered by the 1-hour budgets.

During 2004, along with the designation of 8-hour ozone nonattainment areas, EPA promulgated an update to the federal conformity rule (40 CFR 93). This update

established new interim tests to be applied when an area sought to determine conformity after being designated as nonattainment under the 8-hour ozone standard and before SIPs were developed establishing new budgets for VOCs and NOx.

In general, two issues guided the application of the requirements of the new conformity rule to the local area. First, based on the monitored 8-hour concentrations of ozone, the Louisville area was designated as a basic nonattainment area. Second, the nonattainment area includes all of the former maintenance area and additional area, as well. EPA classifies this type of area as a Scenario 3 area. For a Scenario 3 area such as Louisville, the requirements of the conformity rule are:

(1) the 1-hour budgets must be used for the maintenance area for the analysis years for which they apply[1], and
(2) an interim test for the 8-hour standard must be used for the new areas or for the nonattainment area, as a whole.

CONFORMITY UNDER THE PM 2.5 STANDARD

In April 2005, when the local area was designated as being in nonattainment of the particulate matter standard, there were no previous budgets. In addition, there were no counties which had been previously divided on an attainment/ nonattainment basis. The counties which were designated as nonattainment under the PM 2.5 standard were all designated in their entirety with the exception of Jefferson County, IN which had not been previously designated as nonattainment for any pollutant.

During 2005, along with the designation of PM 2.5 nonattainment areas, EPA promulgated an update to the federal conformity rule (40 CFR 93). This update established new interim tests to be applied when an area sought to determine conformity after being designated as nonattainment under the PM 2.5 standard and before SIPs were developed establishing new budgets for PM 2.5 and its precursors.

CONSULTATION FOR THE AMENDMENT OF *HORIZON 2030*

The first step in determining conformity of *Horizon 2030* was to consult with the interagency consultation (IAC) partners concerning matters not explicitly determined by the conformity rule. Since conformity under both the 8-hour ozone and PM 2.5 standards had recently been determined, many of the issues normally arising in conformity had already undergone consultation. Since these issues were not raised

[1] Under limited circumstances, the July 1, 2004, Transportation Conformity Rule allowed areas to "disregard" 1-hour ozone budgets for the purposes of demonstrating transportation conformity, if it were determined through interagency consultation that these budgets were not appropriate for use. On October 20, 2006, the United States Court of Appeals for the District of Columbia vacated this provision of the Transportation Conformity Rule.

during consultation this time, the portions of the analysis involving them were accomplished consistent with established practice. The consultation for this amendment focused mainly on two matters.

Issues Relating to both the 8-hour Ozone and PM 2.5 Standards

Source of Bullitt County and Oldham County VMT and Speeds

An issue had been raised concerning the source of VMT and speeds to be used in estimating pollutant emissions for Bullitt and Oldham counties in the analyses supporting conformity determinations. KYTC had been supplying this information, but since the KIPDA travel model includes those counties, it has been stated that KIPDA should supply that information starting with the upcoming conformity analysis. KIPDA had agreed to do this. During consultation, the issue was to be resolved by finalizing agreement concerning which agency/ies would provide the VMT and speed information and how it would be produced.

Conclusion: The IAC members agreed that KIPDA would provide VMT and speed information to the Kentucky Division for Air Quality (KYDAQ) for the determination of emission estimates for Bullitt and Oldham counties.

Project Changes and their Evaluation in the Travel Model

A number of project amendments to the long range transportation plan were presented to the IAC members for their review. In particular, there were several complex interchange improvements which were provided during the consultation. For these projects, multiple changes had been recommended; some of the changes were regionally significant, and some were not (i.e. Some of the changes could be reflected in the travel demand model, and some could not.) KIPDA staff provided the IAC members with the complete list of changes for each project, and recommendations concerning which changes should be considered regionally significant. The IAC members had no comments or questions concerning the projects.

Conclusion: The IAC members accepted the recommendations of KIPDA staff concerning which projects were regionally significant.

Approaches for Developing Annual Emission Estimates

Since the local area was designated as nonattainment of the PM 2.5 standard because it was exceeding the annual average concentration allowed by the standard, the conformity analysis must be based on an estimate of annual direct PM 2.5 and NOx emissions rather than an estimate of daily emissions as is used in the conformity analysis for ozone. There was some discussion of this point, but the IAC members agreed to continue with the established practice. The discussion of the established practice can be found in the PM 2.5 issues portion of that section.

ESTABLISHED PRACTICE

In addition to the issues discussed during consultation, there were several issues which were not explicitly discussed but which had impacts on the analysis. These issues were handled in a manner consistent with the previous established practice. The more prominent issues are discussed in the following section.

8-hour Ozone -- Analysis Years and Conformity Tests

The conformity rule requires that analyses be done for the attainment year and the last year of the transportation plan. In addition, other intermittent year(s) are required such that no two analysis years are more than ten years apart.

The conformity rule requires that a 1-hour budget test must be used for the maintenance area and that an interim test must be used either for the new areas or the nonattainment area, as a whole. In addition to the options concerning geographic area, there are also two options for the interim test. They are:
(1) build emissions no greater than no-build emissions, or
(2) analysis year emissions no greater than 2002 emissions.

The IAC partners had consulted on these issues for the two previous conformity analyses. The group had discussed these interrelated issues and chose 2009 (the projected attainment year), 2012, 2020, and 2030 as analysis years. For the situations where an interim emission test was appropriate, the IAC partners had chosen to use the 2002 baseline or "no greater than 2002" test. Since there had been no budgets in recent use for the 2009 analysis year, it had been agreed that the 2002 baseline test would be applied to the entire nonattainment area for that analysis year. This decision was made based a provision of the Transportation Conformity Rule which was subsequently vacated by the United States Court of Appeals for the District of Columbia Circuit on October 20, 2006. As a result of this Court's ruling, this conformity determination reflects the use of VOC budgets from the 15 percent plans for this area as well as the 2002 baseline test for the 2009 analysis year for the entire area. There were only VOC (and not NOx) budgets to consider for the 2009 analysis year. Other analysis years were not affected by this Court ruling. For the other analysis years, it had been agreed that the 2002 baseline test would be applied only to the new nonattainment areas of Bullitt and Oldham counties with the budget test applied to the 1-hour maintenance area. The IAC partners agreed to continue the past practice regarding these issues. A summary of the analysis years and conformity tests is shown in the table below.

Analysis Year	Conformity Test(s)
2009	2002 Baseline test for the (5-county) nonattainment area; Budget test for VOCs for the 1-hour maintenance area
2012	Budget test for the 1-hour maintenance area and 2002 Baseline test for the new areas of Bullitt and Oldham counties
2020	Budget test for the 1-hour maintenance area and 2002 Baseline test for the new areas of Bullitt and Oldham counties
2030	Budget test for the 1-hour maintenance area and 2002 Baseline test for the new areas of Bullitt and Oldham counties

PM 2.5 Issues

Previous consultation related to conformity under the PM 2.5 standard had established practice concerning several issues. The practices were continued for those matters which included:
(1) which pollutants and precursors would be analyzed,
(2) the analysis years and the conformity tests which would be applied, and
(3) the approach to be used for developing estimates of annual emissions.
Each of these issues is discussed in more detail below.

Pollutants and Precursors

The conformity rule requires that direct vehicle PM 2.5 from the tailpipe and brake and tire wear be analyzed. The rule also requires that oxides of Nitrogen (NOx) (one of the PM 2.5 precursors) must be analyzed unless EPA and the respective state air agency make findings that its influence is insignificant. PM 2.5 from road dust and the precursors volatile organic compounds, oxides of Sulfur, and ammonia do not have to be considered because neither EPA nor the respective state air agency has made a finding of significance for them. PM 2.5 from construction dust does not have to be considered because there is no State Implementation Plan (SIP) indicating its influence is significant.

Conclusion: The established practice was that only direct PM 2.5 from the tailpipe and brake and tire wear and NOx will be considered in the analysis.

Analysis Years and Conformity Tests

The conformity rule requires that analyses be done for the last year of the transportation plan and for a year within five years of the present. In addition, other intermittent year(s) are required such that no two analysis years are more than ten years apart.

There are no emission budgets for PM 2.5 or for NOx with the exception of the budget established for NOx as part of the "maintenance" SIP submitted when the local area was seeking redesignation to attainment of the 1-hour ozone standard. That budget was for a different geographical area as well as being for a different pollutant. It is not applicable to the PM 2.5 analysis to be undertaken.

Since there are no applicable budgets for PM 2.5 and NOx, the conformity rule requires the use of an interim emission test. The interim emission test must be either of the following:

(1) build emissions no greater than no-build emissions, or
(2) analysis year emissions no greater than 2002 emissions.

For previous ozone conformity analyses, the 2002 baseline or "no greater than 2002" test has been used. Previously KIPDA had suggested that this approach be used for this PM 2.5 conformity analysis, and the IAC member had agreed. The 2002 baseline test would be applied to the entire PM 2.5 nonattainment area for all analysis years.

Conclusion: The established practice was that the analysis years be 2009, 2012, 2020, and 2030 and that the "no greater than 2002" test would be used for the entire PM 2.5 nonattainment area for all of the analysis years. A summary of the analysis years and conformity tests is shown in the table below. (It should be noted that an analysis of the emissions for 2002 will be conducted as the basis for comparison to the analysis years.)

Analysis Year	Conformity Test(s)
2009	2002 Baseline test for the PM 2.5 nonattainment area
2012	2002 Baseline test for the PM 2.5 nonattainment area
2020	2002 Baseline test for the PM 2.5 nonattainment area
2030	2002 Baseline test for the PM 2.5 nonattainment area

Approaches for Developing Annual Emission Estimates

As stated above, the local area was designated as nonattainment of the PM 2.5 standard because it was exceeding the annual average concentration allowed by the standard. This means that the conformity analysis will need to be based on an estimate of annual direct PM 2.5 and NOx emissions rather than an estimate of daily emissions as is used in the conformity analysis for ozone.

Four approaches are included in the guidance. They are the:

- Single-run approach,
- Two-season approach,
- Four-season approach, and
- Monthly approach.

These vary in complexity and effort. The single-run approach is the simplest and should require the least amount of time and effort. The guidance indicates that this approach is applicable when input conditions do not vary significantly throughout the year. Other factors to be considered include (1) consistency with a SIP budget or base year emissions, (2) availability and quality of seasonal or monthly data, and (3) resource implications.

To help assess the applicable factors, sensitivity analyses performed for other areas were reviewed by the IAC members during previous consultation. During the discussion of these analyses, the difficulty of finding representative values for some MOBILE 6 inputs was debated. (See also the section concerning MOBILE 6 inputs.) This issue was discussed briefly during this consultation with the IAC members agreeing to continue the established practice.

Conclusion: The IAC members agreed that this issue be resolved as follows:
(1) The single-run approach will be used for this analysis.
(2) Additional discussion will be necessary to determine which approach will be used for future conformity analyses and for SIP development.

CONFORMITY OF *HORIZON 2030*

The long-range plan, *Horizon* 2030, was examined to determine if it meets the requirements of the conformity rule under both the 8-hour ozone standard and the PM 2.5 standard. In general, examinations for conformity have two major components:
(1) an air quality analysis to determine that air pollutant emissions do not exceed the budgets (for ozone) set in the SIPs or the emission levels for a given base year such as 2002 (for ozone and PM 2.5); and
(2) a monitoring of the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs.

In the past, consultation with the state and local air quality agencies and US EPA had determined that there are no approved TCMs in the SIPs of Indiana and Kentucky. Therefore, it was possible to show conformity of *Horizon* 2030 simply by determining that the air pollutant emissions do not exceed the budgets in the SIPs or the base year emissions.

In general, the calculation of the regional emissions for 2002 and the analysis years involved three procedures. First, the VMT and speeds were determined. Second, the MOBILE 6.2 emissions model was used to determine the emission factors for the pollutants and precursors. Third, the VMT was multiplied by the emission factors to determine the emissions for each county. The use of these three procedures in Bullitt and Oldham counties and the Madison Township of Jefferson County (IN) varied slightly from their use in Clark, Floyd, and Jefferson (KY) counties. The details of their use are discussed in the Regional Emissions Analysis section below.

KIPDA TRAVEL DEMAND MODEL

The KIPDA travel demand model is a mathematical model which relates travel to the transportation system and basic socioeconomic information. The domain of the model is a study area which includes the Louisville (KY-IN) Metropolitan Planning Area. The Louisville (KY-IN) Metropolitan Planning Area consists of Clark and Floyd counties, and 0.1 square miles in Harrison County, IN, and Bullitt, Jefferson, and Oldham counties, KY. This area is divided into 807 smaller units called traffic analysis zones.

Most of the KIPDA travel demand model was updated and calibrated during 2004-2005. This update established 2000 as the new base year for the model. The model update utilized the information incorporated into the travel model during previous updates. In addition, information from the 2000 Census, the 2000 KIPDA Household Travel Survey, and the 2004 on-board survey of transit riders by the Transit Authority of River City (TARC) was also incorporated. During the update, the model parameters were adjusted such that the model output matched—within reason—three main calibration criteria based on measured data. These criteria were: (1) daily VMT for all highway facilities except local roads for the region; (2) the distribution of trip lengths (duration in time); and (3) highway traffic volumes crossing the Ohio River screenline. The result of the update was a travel model which replicated travel in the Louisville area for 2000. The updated travel model was subsequently used in the regional air quality analysis.

The KIPDA travel demand model uses the standard four steps of modeling: trip generation, trip distribution, mode choice, and trip assignment. In addition, it considers travel by vehicles entering, leaving, and crossing the study area. These types of trips are known as external-internal, internal-external, and external-external, respectively. The internal ends of these trips are determined by the methods described below for internal-internal travel. The external ends are determined from the volume of traffic crossing the study area boundary at any of the 48 external stations.

Trip generation is the process of determining the number of unlinked trip ends--called productions and attractions--and their spatial distribution based on socioeconomic variables such as households and employment. Trip rates used to define these relationships were derived from the travel data collection efforts described above. This information was supplemented by use of the *National Cooperative Highway Research Program Report #365* and the Institute of Transportation Engineers' *Trip Generation Report*. The KIPDA travel demand model uses three internal-internal trip purposes and utilizes different trip rates for each. Internal-internal trips are those which have both ends inside the model domain. The three purposes are home-based work, home-based other, and non home-based.

Trip distribution is the process of linking the trip ends thereby creating trips which traverse the area. The KIPDA travel model uses a gravity model to link all trips except the external-external ones. The gravity model is based on the principle that productions are linked to attractions as a direct function of the number of attractions of a zone and as an inverse function of the travel time between zones. This inverse function of travel time is used to generate parameters called friction factors which, in turn, direct the gravity model. The friction factors used in the gravity model were developed as part of the calibration effort performed during the model update. In addition, information from the study which investigated the behavior of travelers crossing the Ohio River and traffic count information from 2000 were utilized to develop additional parameters called K-factors. The K-factors are used by the model to ensure that it is predicting the correct volume of traffic crossing the Ohio River.

Mode choice is the process used to separate the trips which use transit from those which use automobiles. It can also be used to separate the auto drive-alone trips from auto shared-ride trips or to apply the average number of persons per vehicle values to convert person trips to vehicle trips. In the KIPDA travel demand model, mode choice is based primarily on information provided by the 2004 on-board survey of transit riders by TARC. In addition, data concerning the daily ridership for recent years was analyzed to determine its trend. It was determined that ridership seemed to be growing slightly. However, statistical tests indicated that the slope of the trendline was not statistically significant. Therefore, the number of transit trips in the KIPDA model is based on the recent on-board survey.

This approach was deemed acceptable for several reasons. The primary reason was that given that the advanced transit projects were being removed from Horizon 2030, the transit system in future years is projected to be essentially the same as the present system. In addition, this approach does not consider the slight increase in transit trips (and slight decrease in vehicle trips) the trendline data suggests. This provides a more conservative approach. Finally, the proportion of trips utilizing transit is less than 2% of the total trips. So small differences in the number of transit trips should provide a negligible effect on overall travel.

Trip assignment is the process used to determine which links of the network a trip will use. There are several assignment schemes which may be used. Two of the more common schemes are All-or-Nothing (AON)--in which all trips between two zones follow the shortest time path--and Stochastic--in which trips between two zones may be assigned to several paths based on their impedances or travel times. It is not uncommon for travel models to use several assignment schemes in sequence to converge to a better assignment. A sequence commonly used involves using several AONs with the traffic volumes reported at the end of each scheme being a weighted average of the volumes from the most recent scheme and the volumes from the previous schemes. A capacity restraint provision is used to adjust travel times between assignment schemes. This sequence is called an equilibrium assignment.

The KIPDA travel model uses an equilibrium assignment which converges when the change in volumes averages 1 percent or less.

The output from the KIPDA travel model is in the form of a series of links with each link having certain associated data such as number of lanes, capacity, facility type, area type, functional class, and volume. This data allows for the calculation of other link information such as VMT. The VMT can be calculated as the product of the volume of traffic using a link times the distance of the link.

Adjustment Factors for Travel Model Output

The VMT and speeds from the travel demand model were adjusted before being used in the calculation of regional emissions. The purpose of these adjustments was to reconcile the model output with travel estimates from other sources, such as the Highway Performance Monitoring System (HPMS) estimates of VMT. To perform this adjustment, factors were developed for the year of the HPMS or other estimates and applied to model output for other years.

The development of the VMT adjustment factors involved comparing the outputs of the travel demand model to the HPMS VMT estimates for 2000. Factors were developed to adjust the model output to account for variation between the model and HPMS within each of the counties. To do this, it was necessary to disaggregate the VMT from the 2000 model run by county and functional classification. The VMT estimates derived from the model were then compared to the HPMS VMT estimates for 2000 to develop adjustment factors to be applied to the model output for subsequent years. The 8-hour ozone analysis is based on a level of traffic and the accompanying emissions expected on a typical summer weekday. For that analysis, the adjustment factors were increased by 2.9% to reflect the higher volume of traffic that can be expected on a typical summer weekday relative to the annual average daily traffic. The PM 2.5 analysis is based on annual traffic and the accompanying annual emissions. Therefore, the adjustment factors for that analysis were not increased; rather they were based on the annual average daily traffic. The adjustment factors for VMT were developed on a functional classification basis for each county.

The development of the speed adjustment factors involved a similar process. The outputs of the travel demand model were compared to estimates of speed based on: (1) the equations of the Highway Economic Reporting System (HERS) and (2) the use of data from the Automatic Continuous Traffic Recorders (ATRs) of the Kentucky Transportation Cabinet (KYTC) for 2001-2002.

The HERS equations were used to estimate speeds on 402 sections of urban roadways for five functional classifications. The speeds from these roadway sections were used to determine the average speed for each of five functional classes. The speeds used in the travel model were also averaged for each urban functional class. The speed adjustment factor for each urban functional class was calculated as the

ratio of the average speed using the HERS equations to the average speed using the travel model data.

The KYTC ATR data was used to estimate speeds on 84 sections of rural roadways for four functional classifications. The speeds from these roadway sections were used to determine the average speed for each of four functional classes. The speeds used in the travel model were also averaged for each rural functional class. The speed adjustment factor for each rural functional class was calculated as the ratio of the average speed using the ATR data to the average speed using the travel model data.

The procedures described above produced speed adjustment factors for all functional classes except rural minor collectors and rural and urban local roads and ramps. (Ramps are not officially a separate functional class, but the speed behavior of traffic on ramps is not expected to be like that of any other functional class. Therefore, the ramps were treated as a separate "functional class". There was not sufficient data to estimate speeds for the roadways of these classes. For the rural minor collectors and rural and local roads, the speed adjustment factor of the next higher functional class was used. For ramps, the speeds in the travel model were used without adjustment (i.e. the speed adjustment factor for ramps = 1).

MOBILE 6.2 EMISSION FACTOR MODEL

In addition to the VMT, emission factors are the other component in calculating emissions. As previously mentioned, the Louisville region is a nonattainment area for the pollutants ozone and PM 2.5 and must therefore control direct PM 2.5 and the precursors of ozone and PM 2.5, VOCs and NOx. The emission factors for VOCs, NOx, and PM 2.5 were determined using the MOBILE 6.2 emissions model. The Louisville Metro Air Pollution Control District (APCD) produced the emission factors and calculated the emissions for Clark and Floyd counties, IN and Jefferson County, KY. The emission factors and emission estimates for Bullitt and Oldham counties, KY were developed by the Kentucky Division for Air Quality (KYDAQ). The emission factors and emission estimates for the Madison Township of Jefferson County, IN were developed by Dean Englund, a consultant for the Indiana Department of Transportation (INDOT). The procedures used in calculating these emission estimates are discussed below.

The VMT generated in Clark, Floyd, and Jefferson counties comes from some vehicles presently subject to an inspection/maintenance (I/M) program, from some vehicles previously subject to I/M, and from some vehicles which have never been subject to I/M. At the time of the consultation for *Horizon 2030*, the I/M program in Clark and Floyd counties was expected to be discontinued after 2006. Therefore, it was modeled in that way. The I/M program in Jefferson County was discontinued in 2003. The fuels which are used in Clark, Floyd, and Jefferson counties include

reformulated gasoline (RFG) and reduced Reid vapor pressure gasoline (RVP). Unregulated gasoline is used in the new nonattainment areas of Bullitt and Oldham counties and the areas adjacent to the nonattainment area, and vehicles from these areas can be expected to travel in the Clark, Floyd, and Jefferson counties also. The emission factors for Clark, Floyd, and Jefferson counties used in the air quality analysis vary by county because they represent a VMT-weighted composite based on an estimate of travel in each county by vehicles from the various portions of the region. The assumptions used in developing the composites were consistent with those of the appropriate air quality agency for each of the counties. For Clark and Floyd counties, the assumptions of the Indiana Department of Environmental Management (IDEM) were used, and for Jefferson County, the assumptions of the APCD were used. These assumptions had been previously reviewed and accepted by the IAC partners.

The assumptions used in developing the emission factors for Clark, Floyd, and Jefferson counties were the same as those that were used in developing the updated VOC and NOx budgets (in 2003) with a few exceptions where newer data was incorporated during October, 2004. The changes made in October, 2004 which affected the VOC and NOx emissions were:

(1) the incorporation of the new vehicle registration data for Clark and Floyd counties,
(2) the development and use of new vehicle registration data for Jefferson County, (KY) and
(3) the use of arterial emission factors with VMT for rural local roads.

The first two of these changes were direct inputs to the MOBILE model. In addition, they were used with other available data to adjust the VMT mix input to the MOBILE model. As previously mentioned, the new vehicle registration for Clark and Floyd counties was made available to APCD from IDEM through KIPDA. The new vehicle registration data for Jefferson County was developed using information collected by the local I/M program (known as the Vehicle Emissions Testing or VET program) through January, 2003. This data was based primarily on 2002 data, which was the last full year the VET was in operation.

The third change did not affect the emission factors from the MOBILE model but rather their application. MOBILE recognizes four facility types of roadways—freeways, arterials, local roads, and ramps. The previous practice was to use local road emission factors for VMT for local roads. However, the emission factors for local roads were restricted to only one speed, which EPA has recently judged to be inappropriate for rural local roads. The recent EPA guidance has recommended that arterial emission factors for the appropriate speed or speed bin be used with local road VMT, and this recommendation was incorporated into the analysis.

The emission factors for Bullitt and Oldham counties were developed by KYDAQ. KYDAQ used the more traditional approach to developing emission factors. Most of

the inputs to the MOBILE 6 model were defaults and/or data used in previous SIPs. Neither the maintenance nor the new nonattainment portions of Bullitt and Oldham counties has an I/M program. So it was not necessary to have I/M input information for MOBILE 6. However, reformulated gasoline (RFG) is required for the maintenance portions of Bullitt and Oldham counties while unregulated gasoline is used in the new nonattainment areas of the two counties. Input data was provided to the MOBILE 6 model to reflect this difference. KYDAQ received VMT and speed information by functional class from KIPDA. Using the representative speed provided by KYTC, KYDAQ developed an emission factor for each functional classification for each portion of the counties.

As with the emission estimates and factors developed for Clark, Floyd, and Jefferson counties, the assumptions used for Bullitt and Oldham counties were the same as those for the 2003 budget updates with a few exceptions. The exceptions were that new VMT and speed estimates had been developed for the recent update of *Horizon 2030,* and these were used.

The PM 2.5 emission factors for the Madison Township of Jefferson County, IN were developed by Dean Englund, a consultant for the Indiana Department of Transportation (INDOT). Mr. Englund used an approach to developing emission factors that was similar to the method used by APCD. However, since there is no travel model for Madison Township, determining the origin of the travel in that township required another source of information. Mr. Englund based his estimates of the origin of tripmaking (and therefore gasoline specifications and the presence/ absence of I/M programs) on data from 2000 Census. In addition, other data was "borrowed" from the Floyd County data developed by APCD. This data was adjusted to account for conditions typical of the Madison Township (e.g. no freeways or ramps). The result was that four (five for 2002) combinations of emission factors were generated to account for the various categories (based on trip origin and associated gasoline and/or I/M program) of VMT.

AIR QUALITY ANALYSIS PROCEDURES

The air quality analysis involved three steps. The first step was to review the projects to determine which projects were "regionally significant" and needed to be included in the regional emissions analysis. The second step was to develop estimates of travel behavior. The final step was to calculate the emissions associated with the travel. The second and third steps collectively are the Regional Emissions Analysis. Each of these steps is discussed below in greater detail.

Project Review

The first step involved determining which transportation plan projects were "regionally significant" and therefore to be included in the regional emissions analysis. As previously discussed in the consultation section, the project amendments were

proposed for the plan, reviewed by conformity partners, and evaluated as a group to be incorporated into the plan.

As in prior plans, some of the projects in *Horizon 2030* have been excluded from the regional emissions analysis. Most of the projects which were excluded were exempt projects as defined in the Code of Federal Regulations in 40 CFR 93.126 and 40 CFR 93.127. In addition, a few projects were excluded from the regional emissions analysis due to a lack of sufficiently detailed information. They include:

1. TSM Projects

   Incident Management Program:
   This project involves providing the motorist with information concerning reduced capacity of the facility. At this time, the route for diversion is totally at the discretion of the motorist. Therefore, there is insufficient information to quantify the emission impacts using the travel demand model approach.

   Spot Improvements:
   This is a funding mechanism for undetermined intersection improvements which would have minimal air quality impacts. No projects with air quality impacts are currently proposing use of these funds.

2. TSM Corridors

   A group of corridors was identified for improvements utilizing TSM. At this point, sufficient detail is lacking for inclusion in the air quality conformity analysis.

3. Roadway Projects

   I-264 / Muhammad Ali Blvd./ River Park Dr. interchange:
   At this point, sufficient detail is lacking for inclusion of this project in the air quality conformity analysis.

These projects continue to be excluded from the regional emissions analysis.

Regional Emissions Analysis

As previously mentioned, the procedures in Bullitt and Oldham counties and the Madison Township of Jefferson County (IN) varied slightly from those used in Clark, Floyd, and Jefferson (KY) counties. In addition, there were two projects which could not be analyzed using the travel model. These were evaluated using spreadsheet methods. The procedures for each portion of the nonattainment area and for the other two projects follow.

The emission estimates for Clark and Floyd counties, IN and Jefferson County, KY were determined in the following manner. First, the KIPDA travel demand forecasting model was used to estimate travel behavior in the region. Second, the output from the travel model was adjusted using the adjustment factors discussed previously, and the adjusted VMT was placed in five miles per hour speed bins compatible with the MOBILE emission factor model. Third, the VMT in each of the speed bins was multiplied by the appropriate MOBILE emission factor to determine the emission levels for VOCs and NOx. It should be noted that the second (adjusting the travel model output) and third (calculating the emissions) steps were done separately for the 8-hour ozone and PM 2.5 analyses. As previously noted, the adjustment factors for the 8-hour ozone analysis were 2.9% larger than the adjustment factors for the PM 2.5 analysis. This resulted in slightly different VMT levels and slightly different distributions when the VMT was placed in the speed bins. In addition, the PM 2.5 emissions were initially calculated as daily emissions. Therefore, they were converted to annual emissions by multiplying by 365 days/year.

Two projects could not be included in the travel model. These two projects were the Louisville Traffic Signal Improvement Program (in Jefferson County) and TARC's new and restructured transit service (in Clark and Jefferson counties). Estimates of the emission reductions of these projects were developed using spreadsheet methodologies. The emission reductions from these projects are minor and were included in the calculation of the emissions for Clark and Jefferson counties, where appropriate.

The emission estimates for Bullitt and Oldham counties were developed by the KYDAQ in the following manner. The KIPDA travel model was the source of the VMT and speed estimates. However, for Bullitt and Oldham counties, the results of the travel model efforts were summarized into total VMT and an average speed for each functional classification. This information was provided for each county for each of the analysis years. The VMT for each class was divided into an estimate of the VMT in the maintenance portion of each county and an estimate of the VMT in the new nonattainment area of each county. As previously mentioned, KYDAQ developed an emission factor for each functional classification for each of the counties. For each functional class, the two VMT estimate were each multiplied by the appropriate emission factor to determine the emission estimate for that class and portion of the county. The emissions for the various functional classes were summed for each portion for each county. This was done because the results had to be separate to be used for the various conformity tests.

The PM 2.5 emission estimates for the Madison Township of Jefferson County, IN were developed by INDOT in the following manner.
(1) Emissions are modeled on a countywide basis.
(2) VMT within each county is identified by source (origin) county.

(3) The proportion of each source county's VMT of total county VMT is used to weight emission factors reflecting control and fuel programs for that source county.
(4) The weighted, composite emission factors are applied to total county VMT to calculate criterion pollutant burdens for that county.

The VOC, NOx, and PM 2.5 emission values were summed to determine the emission totals for each pollutant for the appropriate geographic areas. The calculation of the VOC and NOx emission totals allowed for comparison with the emission budgets in the Indiana and Kentucky SIPs and comparison with the 2002 totals. The PM 2.5 and NOx annual emission totals for the analysis years after 2002 allowed for comparison with the 2002 totals.

RESULTS OF THE ANALYSIS

The transportation plan, *Horizon 2030,* has been examined to determine if it is in conformity with the SIPs of Indiana and Kentucky. The examination has been based on an air quality analysis to determine that air pollutant emissions of the appropriate area did not exceed the budgets set in the SIPs or 2002 emission levels.

As previously mentioned, the other criterion for determining conformity would have been the progress in implementation of the Transportation Control Measures (TCMs) contained in the SIPs. However, since previous consultation had determined that there were no approved TCMs, that criterion did not affect the determination of conformity. The results of the regional emissions analyses for ozone and PM 2.5 are discussed below.

8-hour Ozone Analysis

The transportation plan, *Horizon 2030,* has been examined to determine if it is in conformity with the SIPs of Indiana and Kentucky. The examination has been based on an air quality analysis to determine that:
(1) air pollutant emissions of the (former 1-hour) maintenance area did not exceed the budgets set in the SIPs (which includes the 15% VOC rate of further progress plans and the 1-hour ozone maintenance plans),,
(2) the 2009 emissions for the five-county area were less than 2002 emission levels, and
(3) the 2012, 2020, and 2030 emissions for the new nonattainment portions of Bullitt and Oldham counties were less than 2002 emission levels for the same area.

The regional emissions analysis was conducted to provide estimates of the levels of emissions of volatile organic compounds (VOCs) and oxides of Nitrogen (NOx) for the various scenarios. These emission levels were then compared to the budgets in

the 15% VOC reduction and maintenance SIPs and to each other to determine if the conformity tests agreed to during consultation were passed.

The results of the regional emissions analysis are summarized in Tables 1, 2, 3, and 4. Table 1 shows the summer weekday vehicle-miles-traveled from the analysis. Table 2 shows that for 2012, 2020, and 2030, the summer weekday VOC and NOx emission levels for the (former 1-hour) maintenance area are less than the emission budgets established in the maintenance SIP. Table 2 also shows that for 2009, the summer weekday VOC emission levels for the (former 1-hour) maintenance area are less than the emission budgets established in the 15 percent VOC SIPs. Table 3 shows that the 2009 summer weekday VOC and NOx emission levels for the 8-hour nonattainment area are less than those for 2002. Table 4 shows that for 2012, 2020, and 2030, the summer weekday VOC and NOx emission levels for the new nonattainment areas of Bullitt and Oldham counties are less than those for 2002.

PM 2.5 Analysis

The transportation plan, *Horizon 2030,* has been examined to determine if it is in conformity based on the federal conformity rule. The applicable sections of the rule relate to PM 2.5 nonattainment areas where a PM 2.5 SIP has not been developed. The examination has been based on an air quality analysis to determine that the 2009, 2012, 2020, and 2030 emission levels for the PM 2.5 nonattainment area were less than 2002 emission levels.

The regional emissions analysis was conducted to provide estimates of the levels of emissions of small particulate matter (PM 2.5) and oxides of Nitrogen (NOx) for the various years. These emission levels for the years after 2002 were then compared to the emission levels in 2002 to determine if the conformity tests agreed to during consultation were passed.

The results of the regional emissions analysis are summarized in Tables 5 and 6. Table 5 shows the annual vehicle-miles-traveled from the analysis. Table 6 shows that for 2009, 2012, 2020, and 2030, the annual PM 2.5 and NOx emission levels for the local PM 2.5 nonattainment area are less than those for 2002.

Conclusions – 8-hour Ozone and PM 2.5

The regional emissions analysis of the projects in *Horizon 2030* indicates that the plan is consistent with the goals and emission budgets established in the State Implementation Plans of Indiana and Kentucky. The cumulative effect of the results shown in Tables 2, 3, and 4 indicates that *Horizon 2030* has met the requirements of conformity under the 8-hour ozone standard. The effect of the results shown in Table 6 indicates that Horizon 2030 has met the requirements of conformity under the PM 2.5 standard. In summary, it can be concluded that *Horizon 2030* conforms to the SIPs and meets the requirements of the federal conformity rule.

TABLE 1

SUMMER WEEKDAY VEHICLE-MILES-TRAVELED (VMT) ESTIMATED FOR THE 8-HOUR OZONE NONATTAINMENT AREA (in 1000's of vmt/day)			
YEAR	**INDIANA**	**KENTUCKY**	**TOTAL**
2002	6522	24189	30711
2009	7517	26928	34445
2012	7999	28033	36032
2020	9053	30690	39743
2030	10447	34433	44880

TABLE 2

SUMMER WEEKDAY EMISSIONS FOR THE (FORMER 1-HOUR) MAINTENANCE PORTION OF THE NONATTAINMENT AREA (kg/day)				
EMISSION LEVELS FOR VARIOUS YEARS				
YEAR		**VOCs**	**NOx**	**PASS**
2009	Indiana	6266	------	YES
	Kentucky	17774	------	YES
2012	Regional	19352	34372	YES
2020		13254	15215	YES
2030		13102	13168	YES

NOTE: The criteria for conformity are as follows:

State emission levels for VOCs must be below the Indiana 15% plan emission budget of 7.76 tons/day or 7,039 kg/day.

State emission levels for VOCs must be below the Kentucky 15% plan emission budget of 39.51 tons/day or 35,843 kg/day.

Regional emission levels for VOCs must be below the maintenance plan emission budget of 47.28 tons/day or 42,890 kg/day.

Regional emission levels for NOx must be below the maintenance plan emission budget of 111.13 tons/day or 100,810 kg/day.

TABLE 3

SUMMER WEEKDAY EMISSIONS ESTIMATED FOR THE 8-HOUR NONATTAINMENT AREA (kg/day)			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	**VOCs**	**NOx**	**PASS**
2002	**38659**	**92660**	**--------**
2009	**26081**	**53641**	**YES**

NOTE: The criteria for conformity are as follows:

The emission levels for 2009 must be no greater than those for 2002.

TABLE 4

SUMMER WEEKDAY EMISSIONS ESTIMATED FOR THE NEW NONATTAINMENT AREAS OF BULLITT AND OLDHAM COUNTIES (kg/day)			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	**VOCs**	**NOx**	**PASS**
2002	**3202**	**6323**	**--------**
2012	**1751**	**3139**	**YES**
2020	**1379**	**1787**	**YES**
2030	**1388**	**1415**	**YES**

NOTE: The criteria for conformity are as follows:

The emission levels for 2012, 2020, and 2030 must be no greater than those for 2002.

TABLE 5

ANNUAL AVERAGE DAILY VEHICLE-MILES-TRAVELED (VMT) ESTIMATED FOR THE PM 2.5 NONATTAINMENT AREA (in 1,000,000's of vmt/year)			
YEAR	INDIANA	KENTUCKY	TOTAL
2002	2496	8090	10586
2009	2876	8968	11844
2012	3058	9324	12382
2020	3451	10400	13851
2030	3991	11766	15757

TABLE 6

ANNUAL EMISSIONS FOR THE LOUISVILLE PM 2.5 NONATTAINMENT AREA (in 1000's of kg/year)			
EMISSION LEVELS FOR VARIOUS YEARS			
YEAR	PM 2.5	NOx	PASS
2002	478	32167	-------
2009	307	18439	YES
2012	250	12828	YES
2020	204	5843	YES
2030	221	5040	YES

NOTE: The criteria for conformity are as follows:

The emission levels for 2009, 2012, 2020, and 2030 must be no greater than those for 2002.